

# Quil Ceda Power Bio-Gas Project



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# Introduction To Tulalip Tribes

- Conglomeration of Tribes Formed under the Treaty of Point Elliott 1855
- The Tulalip Tribes Reservation
  - 30 miles north of Seattle
  - Membership 3500 +
  - Reservation Population ~ 10,000
- Successful Business Track Record
  - Quil Ceda Village



# THE TULALIP TRIBES

Snohomish County, Washington State

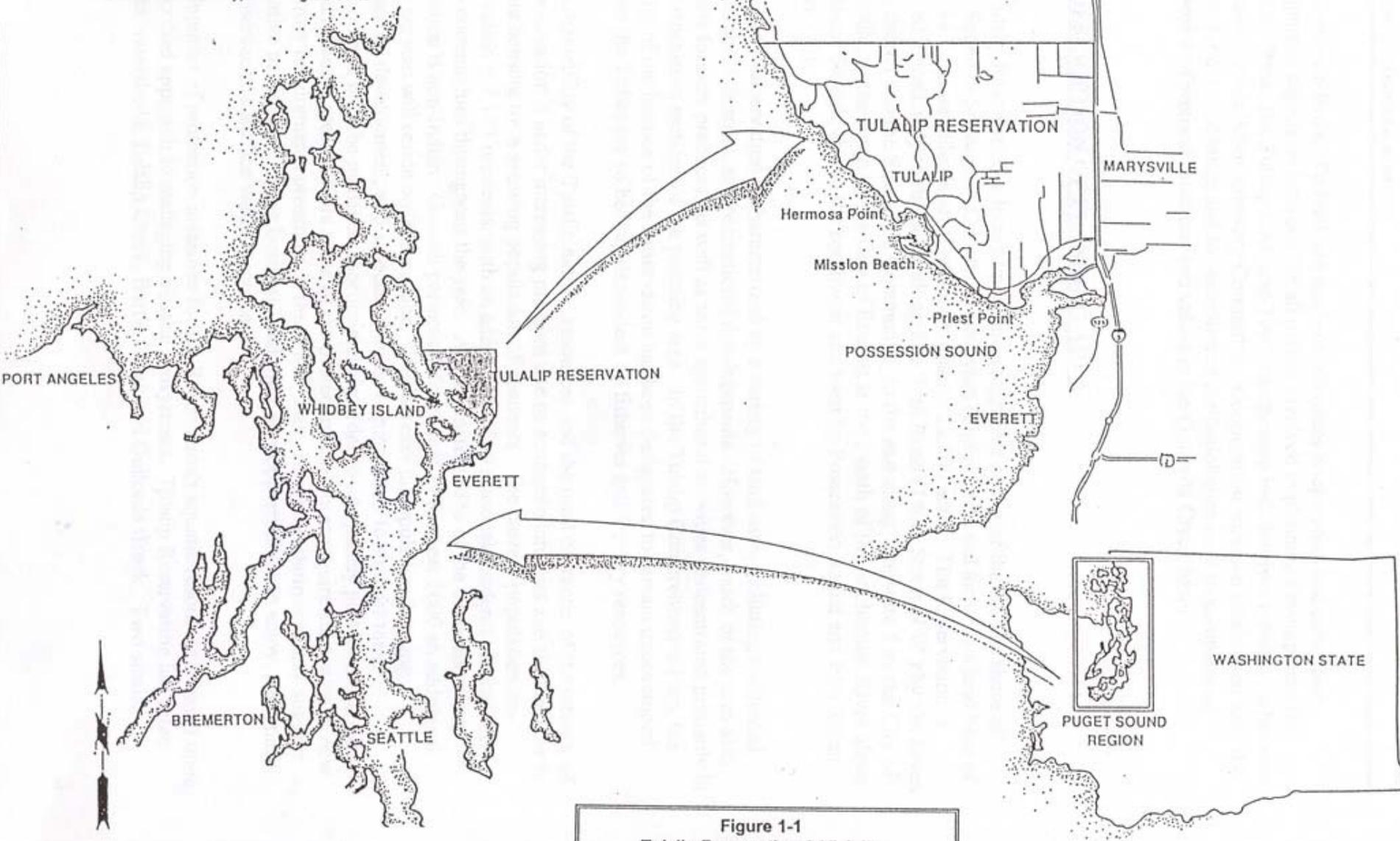


Figure 1-1  
Tulalip Reservation & Vicinity

# Treaty of Point Elliott

- Includes Reserved Rights for Fish and Wildlife
  - On and Off-Reservation Rights
  - Co-Management
  - Harvest
  - Habitat Protection

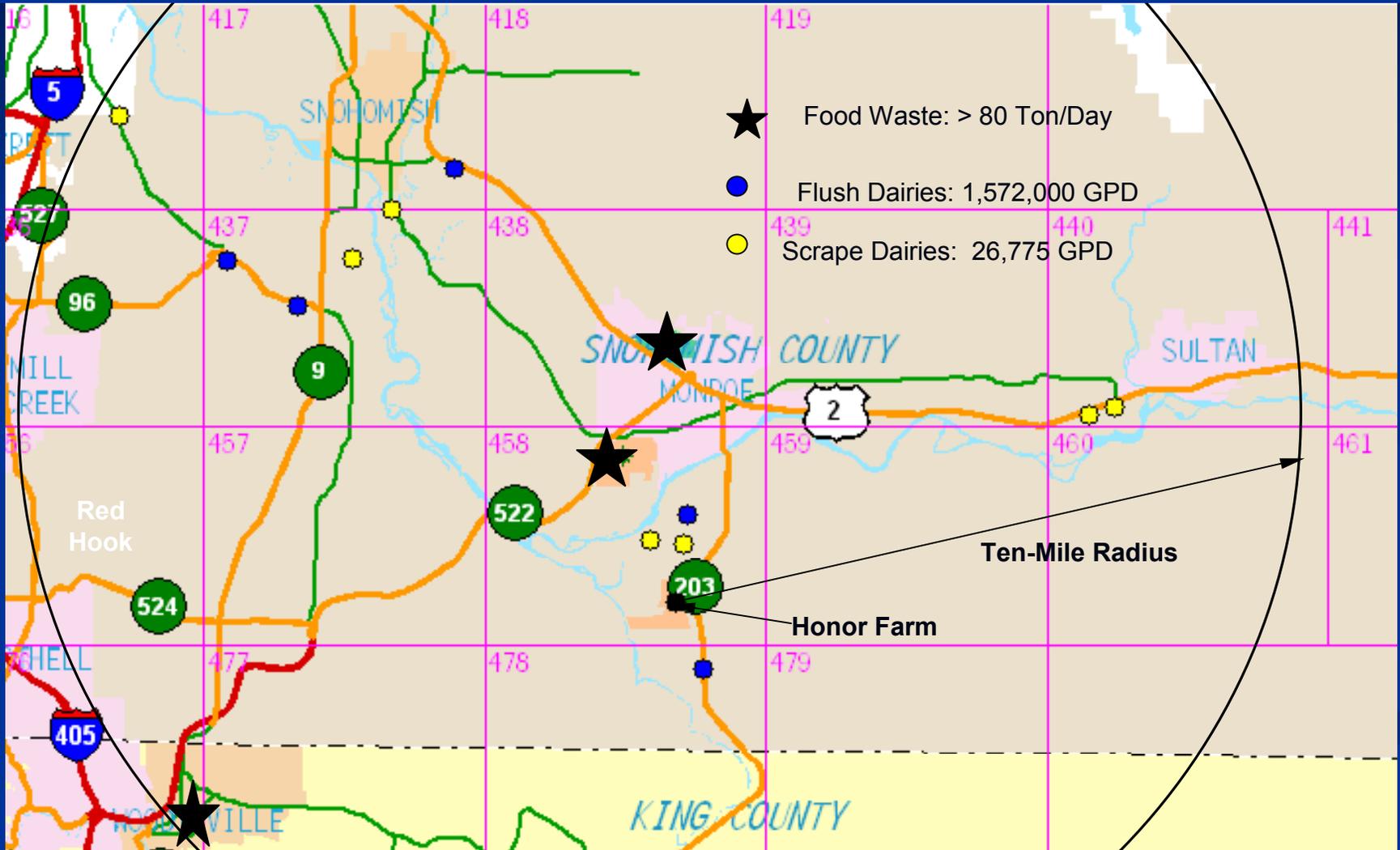
# Regional Trends

- Settlement Trends – Turn of Century Farming & Logging caused habitat damages. As the area population increased so has habitat damages from development.
- Water Quality – Exceeds State Water Quality Standards for Bacteria and Nutrients
- Habitat – Severely Degraded Conditions
- Chinook Salmon, Bull Trout, Northern Spotted Owl & Marbled Murrelet listed under the Endangered Species Act

# Project Overview

- In April 2003 the Tulalip Tribes was awarded a \$250K DOE grant to investigate the feasibility of constructing a regional biogas plant that would run on manure from local dairies.
- The study began in June 2003 and a final report will be released by the end of this month
- Comprehensive assessment of all dairies (over 100) in Snohomish County completed
- We found favorable technical and economic conditions and are moving forward with plans to build a 320- 500 kW biogas plant

# Project Location



# *Snohomish Basin Biogas Partnership*

*“Turning Waste into Energy,  
Conflict into Cooperation”*

- Cooperative Agreement signed April 11, 2003
  - Tulalip Tribes of Washington State
  - Lower Skykomish River Habitat Conservation Group
  - Northwest Chinook Recovery
  - Washington State Dairy Federation

# Feasibility Project Partners

Partner	Role
Tulalip Tribes ■ Dave Somers	Coordination of Project Management
The Clark Group	Project Management and Technical Coordinator
RCM Digesters	Resource Assessment, Technical Studies and Economic Studies
Lower Skykomish River Habitat Conservation Group	Public outreach and liaison with farming community
Horne Engineering	Preliminary design documents
Stella	Power purchase and green tags
Atwater	Business Plan

# Objectives of the Snohomish Basin Biogas Partnership

- The parties to this agreement intend to work together to
  - Protect water quality, restore salmon habitat, and support agriculture in Snohomish County
  - Determine whether development of a dairy waste biogas project is feasible
  - Develop reports for the partnership among all levels of government
  - Seek participation of other individuals or organizations
  - Obtain funds to support the objectives of the SBBP

# Accomplishments

- DOE-funded Biogas Feasibility Study completed;
- Honor Farm Property conditionally assigned to tribe;
- Business plan draft outlining relationships between tribe and farmers;
- Short-list of qualified developers;
- Discussions with purchasers of power and green tags;
- Preliminary site assessment and preparation for NEPA Environmental Assessment.

# Feasibility Study

- Cows – 2,005 mature Holstein equivalents (MHE) from 4 dairies within 1.5 mile radius of Monroe Honor Farm site.
- Fish and Other Food Wastes – adds revenue and improves Plant performance (29,084 pounds per day of food wastes).
- Farms – will rely on Plant for planned herd increases. New dairies can locate on land in area if Plant can manage their waste.
- Revenue Streams – green energy, carbon credits, compost, tipping fees
- By-Products – value-added fertilizer and soil amendments

# Plant Parameters

## Manure Collection: Pressure Sewer

- Collection/mix tank with pump at each dairy
- Central Plant will pump 4 hours a day, 100 gallons per minute
- Central mix tank will concentrate manure to 6-7% solids

## Digestion System: Mesophilic Complete Mix

- Operating temperature: 99 degrees F
- Hydraulic retention time: 4 days
- Non-manure waste streams – 17-25% solids

# Digester System Design Values

## Digester Type

## Complete Mix

Total Cow Number

2,005 MHE influent

Volume

51,506 gal/d total

Digester Volume

165,261 ft<sup>3</sup>

Length

103 ft

Width

100 ft

Depth

16 ft cover

Dimension

11,362 ft<sup>2</sup>

Engine-generators

320 kW

# Biogas System Outputs

- Biogas consisting of 60-70% methane
- Methane will fuel two Caterpillar G3406TA engines with generators rated at 160 kW continuous duty
- Average energy production: 292 kWh

# Outstanding Issues

- Create business and project structure
- Evaluate financing options
- Conduct environmental review

# Future Plans

- Identify the benefits of a biogas facility
- Continue to build coalitions and partnerships
- Consult with the public and complete NEPA EA
- Develop a consortium to design, build, and develop
- Secure funds for development
- Determine the worth of carbon credits

# Benefits

- Off reservation land for restoration
- Experience in emerging technology and new industry
- Improve water quality
- Restore salmon runs
- Increased production at dairies

# Preserving two cultures ....

